*in strobila. Testes numerous, at least* 200 *lying posteriorly in a thin vertical plate extending between water vascular vessels and even beyond them laterally, imbedded in interstitial tissue different from medullary parenchyma. No vesicula seminalis, sperm-duct with large coil; cirrus sac large, containing a looped part of sperm-duct, short cirrus, and an evaginable sac derived from cloaca genitalis. Ovaries and vitelline gland in front of testes. Uterus in front of ovaries, a narrow transverse sac with cavity partly divided by ingrowing trabeculæ. Later uterus converted into several spherical sacs. Eggs thin-walled, surrounded by nutritive (?) cells.*

Hab. *Eupodotis kori.*

The most noteworthy characters of the genus, so far as the external characters go, appear to be the rather wide and rudimentary rostellum, which is, nevertheless, armed with very numerous though very minute hooks. The internal structure is remarkable for the restriction of the gonads to the extreme posterior part of each segment, and to the fact that the very numerous testes arranged only one deep are imbedded in a very different kind of medullary parenchyma, which is obvious to the eye on account of its feeble staining: by the peculiar form of the cirrus sac and the inclusion within it of an outgrowth of the genital cloaca, which is probably protrusible like the somewhat similar "penis" of *Anoplotænia*: and by the fate of the uterus and the presence of interstitial cells lying among the eggs.

## 14. On the Milk-Dentition of the Ratel.

By R. Lydekker.

[Received September 30, 1911: Read November 21, 1911.]

(Text-figures 31 & 32.)

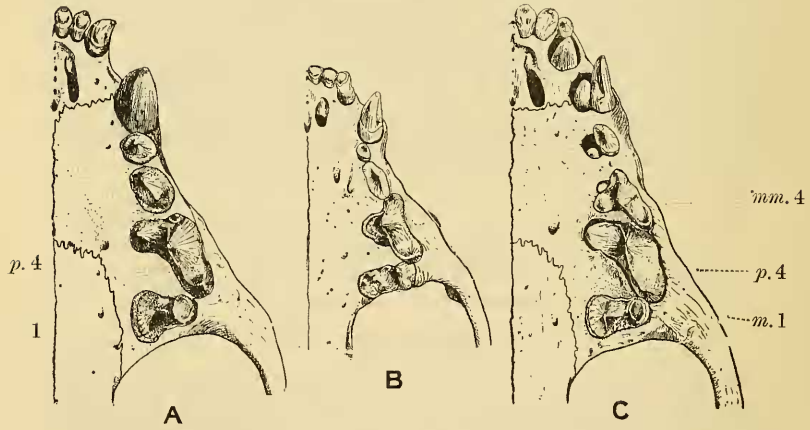
Many instances are known among extinct mammals in which the milk-dentition presents primitive features entirely lost in the teeth of the permanent series. In the equine *Merychippus*, for example, the cheek-teeth of the milk-series are of the short-crowned cementless type of *Anchitherium*, whereas those of the permanent set show the high-crowned and cemented type characteristic of the more specialised representatives of the family Equidæ *. So far, however, as I am aware, no such atavistic features have been recorded in the case of any existing mammals; and it is therefore of interest to bring to notice what appears to be a case of this nature.

In the ninth edition of the 'Encyclopædia Britannica,' Sir William Flower classed the Ratels (*Mellivora*) with the Badgers in the subfamily Melinæ; this classification was followed in Blanford's volume on Mammalia in the 'Fauna of British India' † and in Flower and Lydekker's 'Study of Mammals' ‡.

* See Lull, Amer. J. Science, vol. xxiii. p. 177, 1907.
† Page 175, 1888. ‡ Page 576, 1891.

When re-arranging, some fifteen years ago, the exhibition series of mammals in the British Museum I came, however, to the conclusion that this was incorrect; and in the label on the genus *Mellivora* I stated that although Ratels were generally classed with Badgers, it appeared, from their peculiar type of colouring and the form of the upper molar, that they ought to be placed next the Tayra and Grison (*Galictis*) in the subfamily Mustelinæ. This revised classification (which renders the definition of the last-named subfamily more concise) was followed in the revision of Sir William Flower's article "Carnivora," contributed by myself to the eleventh edition of the 'Encyclopædia Britannica,' and likewise in my account of the Mustelidæ in 'Harmsworth's Natural History'*. It has also been adopted in Max Weber's 'Säugetiere,' who probably follows Winge in this respect.

Text-fig. 31.




Left upper dentition of *Mellivora* and *Galictis*.

**A.** Permanent teeth of *Mellivora*.
**B.** „ „ *Galictis*.
**C.** Milk-, and some of the permanent, teeth of *Mellivora*.

Thus matters stood till a few days ago, when I observed among a series of specimens sent to the British Museum by Miss Olive MacLeod from the Lake Chad district the skull of a Ratel in which the milk-dentition is just being replaced by the permanent set; the upper carnassial and molar being protruded, but the milk-carnassial being still retained, as are the milk-molars in advance of this tooth and the canines.

* Vol. i. p. 513. In revising the 8th ed., 1906, of the 'Guide to the Mammal-Galleries in the British Museum (Nat. Hist.),' I unfortunately allowed *Mellivora* to retain its old position (p. 45).

In the permanent upper dentition of Ratels the carnassial (*p*. 4), in common with that of nearly all other living Mustelines, has the inner tubercle placed close up to the front edge of the tooth, while the molar (*m*.1) is characterised by the antero-posterior diameter of the inner half of the crown being greatly in excess of that of the outer half. In the milk-dentition, on the other hand, the carnassial (which in most Carnivora is a replica of the permanent one) has its inner tubercle placed near the middle of the blade; while, as I gather from another specimen, the inner half of the molar is much narrower than the outer, this tooth having, in fact, what may be called the typical carnivorous triangular form.

Now in both the foregoing respects the aforesaid milk-teeth correspond in general characters with their permanent representatives in *Galictis*; the upper carnassial of that genus being peculiar among existing Mustelines on account of having the inner tubercle placed near the middle of the blade. There are, of course, differences in regard to the details of these teeth, and also in respect to the orientation of the molar, when the milk-series of *Mellivora* is compared with the permanent set of *Galictis*; but the resemblance is such as to leave little doubt as to genetic affinity between the animals to which they respectively belong. And it would thus seem that the milk-teeth of the Ratel and the permanent ones of the Tayra represent a common primitive type, which has been superseded by a more advanced modification in the permanent teeth of the Ratel.

Text-fig. 32.

Outer side of left upper milk-dentition of *Mellivora*, showing the bifid or bicuspid canine.

I find nothing very noticeable in regard to the hinder lower milk-teeth of the Ratel; but the upper canine has a distinctly bifid crown, as in certain Bats, and there are indications of a similar bifurcation in the corresponding lower tooth. Whether this is a primitive or a specialised feature, it is, in this case, difficult to say; it is almost certainly the former in Bats.

In referring to the teeth of *Galictis* as primitive in comparison with those of *Mellivora*, it should be mentioned that the comparison must be limited to those genera, as the permanent carnassial of Tertiary Mustelines, such as *Plesictis*, is of the *Mellivora-Mustela* type. That *Mellivora* is a more specialised

form than *Galictis* is evident, not only from the dental features already mentioned, but from the normal absence of the second lower molar (*m.* 2) and likewise by the shortness of the tail and the disappearance of the ear-conchs; both the latter features being, of course, adaptations to a burrowing life. In connection with the absence of the second lower molar, it is interesting to note that in one specimen in the British Museum (No. 9.7.19.1) this tooth is retained on the left side. It is very small, like the corresponding tooth of *Galictis*, and had come into use before the carnassial was fully protruded, so that it would have been shed early.

Although *Galictis* is now unknown north of Mexico, or thereabouts, it occurs fossil in the later Tertiaries of the United States; and this leads to the idea that *Galictis* and *Mellivora* are divergent members of a common stock which, like the Leopard (*Felis pardus* and *F. onca*) and Ocelot (*F. pardalis*, *F. tristis*, and *F. nebulosa*) groups, once inhabited a large area in Asia, whence it reached America by way of Bering Strait, and, having made its way into South America, died out in the north of the New World.

## 15. On a Further Collection of Mammals from Egypt and Sinai. By J. Lewis Bonhote, M.A., F.L.S., F.Z.S.

[Received October 24, 1911: Read February 6, 1912.]

The following is an account of a small collection of mammals which has been sent home during the past two years by Capt. Flower. The most notable specimens are the *Meriones crassus* and *Acomys russatus* from Sinai, the type locality of these species. Apart from their extreme rarity in collections, the acquisition of these animals has enabled me to identify definitely the *Meriones* of Lower Egypt with Pomel's *M. sellysii* and also to describe the form found in the Sudan as a new race. The specimens of *Acomys russatus* prove to be quite different in size and colour from those obtained near Cairo by Mr. Nicoll and myself, which latter are therefore described under the name *A. r. ægyptiacus* *.

I must express my indebtedness to Capt. Flower and Mr. Nicoll for their kindness in allowing me to work out the collection and more especially for bringing home some of the specimens alive, and thus enabling me to carry on some observations and experiments on which I shall hope to have something further to record in the future.

* The complete account of these two new subspecies appears here; but since the names and preliminary diagnoses were published in the 'Abstract,' No. 103, 1912, they are distinguished by being underlined.—Editor.